

Appl. No. 10/048,079

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Atty. Docket No. 7696M

Amdt. dated: 02/02/04

Amendment & Reply to the Office Action dated 10/01/03

AMENDMENTS TO THE SPECIFICATION

Please add the following new header and paragraph on Page 1 of the Specification, before the heading "Field of the Invention" but after the list of inventors:

RELATED APPLICATIONS

This application claims priority to International Application Serial No. PCT/US00/20991 which was filed on August 2, 2000, which claims benefit of 60/146,954 filed August 3, 1999.

Please insert the following new paragraph after the end of line 6 on Page 8 (after the language "A preferred evaporator is an agitated thin-film evaporator."):

Suitable evaporators for use herein include forced-circulation evaporators, short-tube vertical evaporators, long-tube vertical evaporators, propeller, calandria, horizontal-tube evaporators, falling-film evaporators, spray-film evaporators, channel-switching evaporators, Oslo-type crystallizer, agitated thin-film evaporators, submerged-combustion evaporators, disk evaporators, cascade evaporators, flash evaporators, and combinations thereof. Such evaporators are discussed in further detail in Perry's Chemical Engineering Handbook, 7th Ed., 1997, McGraw-Hill, ppg. 11-108 to 11-111, "Evaporator types and Applications" which is herein incorporated by reference.

Please insert the following new paragraphs on Page 3 after the section title "SUMMARY OF THE INVENTION":

A process for preparing a solvent-based surfactant paste comprising the steps of:

A) forming an aqueous surfactant mixture by blending, by weight of the mixture:

(a) from about 5% to about 85% of an anionic sulfonated surfactant;

(b) from about 15% to about 95% of an organic solvent;

(c) from about 0.001% to about 40% of a chelant;

wherein the aqueous surfactant mixture has a water content of about 5% to 80% by weight of the aqueous surfactant mixture and the aqueous surfactant mixture is a non-Newtonian fluid;

B) drying the aqueous surfactant mixture under vacuum to form the solvent-based surfactant paste having a water content of less than about 1% and which is in the form of a Newtonian fluid having a substantially constant viscosity within the range of 100 cp to

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100000 cp when measured at a temperature of 25°C and within the shear rate range of from 1 s⁻¹ to 1000 s⁻¹.

The process of above wherein the aqueous surfactant mixture may further comprise from about 0.001% to about 40% of other additives selected from the group comprising bleach, bleach activator, buffers, builders, enzymes, whiteners, rheology modifiers, polymers and copolymers, wherein the other additives are provided in the form of an aqueous solution.

The process of above wherein the aqueous surfactant mixture is dried in an evaporative column.

The process of above wherein the step of forming an aqueous surfactant mixture includes blending from about 0.001% to about 40% of an ethoxylated hexamethylene diamine quaternary ammonium compound.

The process of above wherein the step of forming an aqueous surfactant mixture includes blending from about 0.001% to about 40% of other additives selected from the group comprising bleach, bleach activator, builder, enzymes, nonionic surfactants, whiteners and polymers.

The process of above wherein the organic solvent is selected from a group consisting of alkylene glycols, diethyl- and dipropylene glycol monobutyl ethers, glycol monobutyl ether, monoethylethers, monomethylethers, monopropylethers and monobutylethers of propoxy propanol, polyethylene glycols having a molecular weight of at least about 150, methyl acetate, methyl propionate, methyl octanoate, methyl dodecanoate and mixtures thereof.

The process of above wherein the chelant is selected from a group consisting of amino carboxylates, phosphonates, amino phosphonates, polyfunctionally-substituted aromatic chelating agents and mixtures thereof.

A process for preparing a solvent-based surfactant paste comprising the steps of:

A) forming a neutralized mixture by a continuous neutralization loop, the neutralized mixture has a composition comprising:

- (a) an acid form of an anionic sulfonated surfactant and a base present in a molar ratio of from about 1:1 to about 9:1;
- (b) an organic solvent; and

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(c) a chelant;

wherein the neutralized mixture has a water content of from about 5% to about 50% by weight of the neutralized mixture and is a non-Newtonian fluid.

B) recirculating a first portion of the neutralized mixture;

C) removing a second portion of the neutralized mixture from the continuous neutralization loop;

D) drying the second portion of the neutralized mixture under vacuum to form the solvent-based surfactant paste having a water content of from about 0.2% to about 10% and which is in the form of a Newtonian fluid having a substantially constant viscosity within the range of 100 cP to 100000 cP when measured at a temperature of 25°C and within the shear rate range of from 1 s^{-1} to 1000 s^{-1} .

The process of above where the neutralized mixture further comprises other additives selected from the group comprising bleach, bleach activator, buffers, builders, enzymes, nonionic surfactants, whiteners, rheology modifiers, polymers and copolymers, wherein the other additives are provided in the form of an aqueous solution which has a water content of from about 5% to about 50% by weight of the neutralized mixture.

The process of above wherein the second portion of neutralized mixture is dried in an evaporative column.

The process of above wherein the acid form of an anionic surfactant is selected from a group consisting of linear alkyl benzene sulphonic acid, alkyl ethoxy sulphonic acid, alkyl polyalkoxylate sulphonic acid, tallow alkyl sulphonic acid and alkyl sulphonic acid.

The process of above wherein the organic solvent is selected from a group consisting of alkylene glycols, diethyl- and dipropylene glycol monobutyl ethers, glycol monobutyl ether, monoethyl-, monomethyl-, monopropyl- and monobutylethers of propoxy propanol and mixtures thereof, polyethylene glycols having a molecular weight of at least about 150, methyl acetate, methyl propionate, methyl octanoate and methyl dodecanoate.

The process of above wherein the chelant is selected from a group consisting of amino carboxylates, phosphonates, amino phosphonates, polyfunctionally-substituted aromatic chelating agents and mixtures thereof.

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The process of above wherein after step C additional organic solvent is added to the neutralized mixture, so that after the addition of the additional organic solvent the neutralized mixture has a water content of from about 5% to about 50% by weight of the neutralized mixture.

The process of above wherein after step C additional chelant is added to the neutralized mixture, so that after the addition of the additional chelant the neutralized mixture has a water content of from about 5% to about 50% by weight of the neutralized mixture.

A process for drying detergent ingredients comprising the steps of:

A) forming an aqueous detergent ingredient mixture by blending, by weight of the mixture wherein the aqueous detergent ingredient mixture has a water content of about 5% to 80% by weight of the aqueous detergent ingredient mixture;

B) drying the aqueous detergent ingredient mixture using an Agitated Thin Film Evaporator.

A process for converting Newtonian liquids into non-Newtonian liquids comprising the steps of:

A) forming an aqueous Newtonian liquid mixture; and

B) drying said mixture using an Agitated Thin Film Evaporator (ATFE) such that a non-Newtonian liquid is produced

A process for converting non-Newtonian liquids into Newtonian liquids comprising the steps of:

A) forming an aqueous non-Newtonian liquid mixture; and

B) drying said mixture using an Agitated Thin Film Evaporator (ATFE) such that a Newtonian liquid is produced

A process for preparing anhydrous agglomerates comprising the steps of:

A) producing a binder;

B) drying said binder using an Agitated Thin Film Evaporator; and

C) combining said dried binder with powders such that an agglomerate is produced.